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1. Introduction

Ethics in relation to the practice of medicine had continuity from the time of Hippocrates (ca. 460-377 BC) to the 1970s focusing on the physician-patient relationship and moral obligations of beneficence and nonmaleficence. In the 1970s developments such as the gene splicing method and in vitro fertilization (IVF) created concerns about the adequacy of these long-established moral obligations (Beauchamp & Childress, 2009, p. 1). In addition to technological developments, historically, horrifying medical experimentation in concentration camps (the Nuremberg trials in the late 1940s) and the following Helsinki Declaration on the protection of human subjects had influence on the establishment of ethics committees worldwide and a shift toward focusing on the moral obligation of respecting informed consent of research subjects (Andersen, 1999, pp. 11-15; Beauchamp & Childress, 2009, pp. 1, 117; Ebbesen, 2009).

The discipline of bioethics or biomedical ethics was established in the 1970s and various professions are involved such as ethics consultants, health care professionals, medical doctors, biomedical researchers, philosophers, theologians, and politicians. This essay, however, focuses on bioethics as an academic philosophical discipline and on empirical investigation of the ethics of the biomedical profession (Ebbesen, 2009).

Most research within the academic philosophical discipline of bioethics focus on theoretical reflections on the adequacy of ethical theories and principles. The principles of biomedical ethics of the American ethicists Tom L. Beauchamp & James F. Childress (2009) is an example. Beauchamp & Childress examined “considered moral judgements and the way moral beliefs cohere” and found that the general principles of beneficence, nonmaleficence, respect for autonomy, and justice play a vital role in biomedical ethics (Beauchamp & Childress, 2009, p. 13). They believe that these principles are an analytical framework and a suitable starting point for biomedical ethics (Beauchamp & Childress, 2009, p. 12). However, Beauchamp & Childress state that these four principles are not only specific for biomedical ethics; the principles form the core part of a cross cultural (universal) common morality. Beauchamp & Childress appeal to the common morality normatively by saying that the common morality establishes moral standards for everyone and failing to accept these standards is unethical. And, they appeal to the common morality descriptively by saying that it can be studied empirically whether the common morality is actually present in all cultures (Beauchamp & Childress, 2009, p. 4).

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1 In this essay the concepts of bioethics and biomedical ethics are used interchangeable to describe the analysis and discussion of ethical problems of biomedicine.
There is debate on whether the principles and method of Beauchamp & Childress are specific American and whether they can be used outside America, for instance in Europe and Asia. This essay examines these issues by introducing the theory of Beauchamp & Childress, by reviewing a Danish empirical study where Danish oncologists and Danish molecular biologists were interviewed, and lastly by outlining future perspective for broader empirical studies.

2. The common morality

Beauchamp believes that people from different cultures share some moral rules in common. These moral rules are for instance “Tell the truth”, “Do not kill”, “Rescue persons who are in danger”, and “Do not steal”. These moral rules are not implemented the same way in all cultures, however, the norms themselves are cross cultural. According to Beauchamp, these rules are justified by more abstract general principles. There is a transparent connection between these rules and the more general principles. For example the moral rule of “Tell the truth” is justified by the general principle of respect for autonomy, the rule “Do not kill” is justified by the principle of nonmaleficence, the rule “Rescue persons who are in danger” is justified by the principle of beneficence, and lastly, the moral rule “Do not steal” is justified by the principle of justice. One rule can be justified by more than one principle; hence there is a non-linear connection between rules and principles. This shared, universal system of rules and principles constitutes what Beauchamp calls moral in the narrow sense or the common morality (Beauchamp, 1997, p. 26). He defines the common morality as “the set of norms shared by all persons committed to the objectives of morality. The objectives of morality, I will argue, are those of promoting human flourishing by counteracting conditions that cause the quality of people’s lives to worsen” (Beauchamp, 2003, p. 260).

Beauchamp is aware that not everybody accepts or lives up to the demands of the common morality. This is not because these persons have a different morality; it is simply because they are immoral. Hence, the common morality is not just a morality that differs from other moralities (Beauchamp, 2003, p. 260). The common morality is “applicable to all persons in all places, and all human conduct is rightly judged by its standards” (Beauchamp, 2003, p. 260). Hence, the common morality provides an objective basis for moral judgment.

The moral rules and principles of the common morality are often so unspecific and content-thin that they only provide a basic guideline or orientation for addressing specific moral problems, for instance as to whether treatment without patient consent is a moral acceptable enterprise (Beauchamp, 1997, p. 27). Practical moral problems of this kind require that the unspecific content-thin rules and principles of the common morality are made specific and implemented. Since answers to practical moral problems and the balancing of different values do often vary from one culture to another, specification and implementation of norms and principles are often done in different ways in different cultures. The universal system of rules and principles of the common morality does then form the basis or the starting point for this implementation (Beauchamp, 1997, p. 27-28). Beauchamp does not ignore that moral decision-making and practices vary from one culture to another, but they do not vary so much that the common morality is called into question. This plurality of moral decision-making and moral practices constitutes what Beauchamp calls moral in the broad sense introducing the concept of moral differences (Beauchamp, 1997, p. 27). Beauchamp believes that while the common morality or morality in the narrow sense “contains only general moral standards that are conspicuously abstract, universal, and content-thin” morality in the broad sense presents
“concrete, nonuniversal, and content-rich norms” (Beauchamp, 2003, p. 261). Morality in the broad sense implements “the many responsibilities, aspirations, idealism, attitudes, and sensitivities that spring from cultural traditions, religious traditions, professional practice, institutional rules and the like” (Beauchamp, 2003, p. 261). Hence, Beauchamp argues that multiculturalism is not in opposition to universal ethical principles and he defends multiculturalism as a form of universalism (personal communication).

3. The four basic principles of the common morality

Beauchamp defends a moral framework of four clusters of moral principles which form the core part of the common morality. These four principles are: respect for autonomy (respecting the decision-making capacities of autonomous persons), nonmaleficence (avoiding the causation of harm), beneficence (providing benefits and balancing benefits, burdens, and risks), and justice (fairness in the distribution of benefits and risks). To interpret a principle is to tell what the principle is about and Beauchamp argues that the four principles are interpreted differently in different cultures. In figure 1 the four basic principles of the common morality are presented.

<table>
<thead>
<tr>
<th>Respect for autonomy</th>
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<tr>
<td>“As a negative obligation: Autonomous actions should not be subjected to controlling constraints by others” (Beauchamp &amp; Childress, 2009, p. 104).</td>
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<td>“As a positive obligation, this principle requires both respectful treatment in disclosing information and actions that foster autonomous decision making” (Beauchamp &amp; Childress, 2009, p. 104). Furthermore, this principle obligates to “disclose information, to probe for and ensure understanding and voluntariness, and to foster adequate decision making” (Beauchamp &amp; Childress, 2009, p. 104).</td>
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<table>
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<tr>
<th>The Principle of Beneficence</th>
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<tr>
<td>One ought to prevent and remove evil or harm</td>
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<tr>
<td>One ought to do and promote good (Beauchamp &amp; Childress, 2009, p. 151).</td>
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<th>The Principle of Nonmaleficence</th>
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<tr>
<td>“One ought not to inflict evil or harm”, where harm is understood as “thwarting, defeating, or setting back some party’s interests” (Beauchamp &amp; Childress, 2009, pp. 151-152).</td>
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<th>The Principle of Justice</th>
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<td>Beauchamp &amp; Childress do not think that a single principle can address all problems of distributive justice (Beauchamp &amp; Childress, 2009, p. 241). They defend a framework for allocation that incorporates both utilitarian and egalitarian standards. A fair health care system includes two strategies for health care allocation: 1) a utilitarian approach stressing maximal benefit to patients and society, and 2) an egalitarian strategy emphasising the equal worth of persons and fair opportunity (Beauchamp &amp; Childress, 2009, pp. 275, 281).</td>
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Fig. 1. The four basic principles of the common morality. A brief formulation of the four ethical principles: respect for autonomy, beneficence, nonmaleficence, and justice (Beauchamp & Childress, 2009; Ebbesen, 2009).
4. Managing complex cases of biomedicine

The four ethical principles of respect for autonomy, beneficence, nonmaleficence, and justice can be used when managing complex or problematic cases of biomedicine. When the principles are used in biomedicine it is often necessary to make the principles specific for that actual case. A specification of a principle is to narrow its scope and making it action-guiding. Beauchamp & Childress explain specification as “a process of reducing the indeterminate character of abstract norms and generating more specific, action-guiding content” (Beauchamp & Childress, 2009, p. 17). Specification involves a fine-tuning of the range and scope of the principle by increasing information about that specific situation (what time, where, what persons are involved, and so forth). Each principle is prima facie binding, which means that it “must be fulfilled unless it conflicts, on a particular occasion, with an equal or stronger obligation” (Beauchamp & Childress, 2009, p.15). If principles conflict they can be justifiably overridden which is the act of balancing (meaning that none of the principles are absolute). Balancing principles tells about their weight and strength, when balancing two principles, one principle is infringed by another (Beauchamp & Childress, 2009, pp. 19-20). Beauchamp & Childress list six conditions that must be met to justify the infringement of one prima facie principle by another (figure 2). Beauchamp & Childress state that physicians’ acts of balancing and specifying ethical principles often involve “sympathetic insight, humane responsiveness, and the practical wisdom of evaluating a particular patient’s circumstance and needs” (Beauchamp & Childress, 2009, p. 22).

1. “Good reasons can be offered to act on the overriding norm rather than on the infringed norm”.
2. “The moral objective justifying the infringement has a realistic prospect of achievement”.
3. “No morally preferable alternative actions are available”.
4. “The lowest level of infringement, commensurate with achieving the primary goal of the action, has been selected”.
5. “Any negative effects of the infringement have been minimized”.
6. “All affected parties have been treated impartially” (Beauchamp & Childress, 2009, p. 23).

Fig. 2. Conditions constraining balancing. Conditions that must be met to justify infringement of one prima facie norm in order to adhere to another (Beauchamp & Childress, 2009; Ebbesen, 2009).

5. Empirical justification of the common morality

The Danish physician and philosopher Soeren Holm states that the four principles of Beauchamp & Childress are developed from American common morality and that they reflect certain aspects of American society and therefore they are limited to America and unsuited for Europe (Holm, 1997). Two Danish ethicists Jacob Rendtorff and Peter Kemp present a European alternative to Beauchamp & Childress’ principles. Rendtorff & Kemp state that there are four ethical principles specifically suited for managing problematic cases of biomedicine in Europe, namely the principles of autonomy, dignity, integrity, and
vulnerability (Rendtorff & Kemp, 2000). However, I believe that ethical principles always do contain obligations such as ‘you ought to respect …’. What Rendtorff & Kemp call principles do not contain obligations. Hence, strictly speaking, they cannot be considered as principles but as ethical concepts which can be reformulated into ethical principles. This can be done the following way: ‘Respect for autonomy’, ‘Respect for dignity’, and so forth. Beauchamp does also argue that the so-called principles of Rendtorff & Kemp are not principles at all. For instance, Beauchamp considers integrity is a virtue and vulnerability as a property or condition of persons. Furthermore, he thinks that the concept of dignity is one of the most obscure concepts of bioethics, since nobody knows what dignity is. Moreover, as can be seen above, Beauchamp does not believe in specific European ethical principles (personal communication).

Beauchamp states that empirical research could prove him (or Rendtorff & Kemp) wrong. The hypothesis to be tested is that all persons committed to the objective of morality adhere to the common morality (and thereby to the four ethical principles, which form the basis of the common morality) (Beauchamp, 2003, p. 264). First, persons should be screened to test whether they are committed to the objectives of morality (which “are those of promoting human flourishing by counteracting conditions that cause the quality of people’s lives to worsen” (Beauchamp, 2003, p. 260)). Persons not committed to morality should then be excluded from the study. Next, it should be tested “whether cultural or individual differences emerge over the (most general) norms believed to achieve best the objectives of morality” (Beauchamp, 2003, p. 264). Beauchamp writes: “Should it turn out that the individuals or cultures studied do not share the norms that I hypothesize to comprise the common morality, then there is no common morality of the sort I claim and my particular hypothesis has been falsified” (Beauchamp, 2003, p. 264).

If it turns out that other general norms than the ones proposed by Beauchamp are shared across cultures, then the empirical study proves the presence of a common morality, however, of another sort than the one proposed by Beauchamp. Such an empirical study does not tell whether the norms of the common morality are adequate or in need of change. This is a normative question and not an empirical one (Beauchamp, 2003, p. 265). Beauchamp appeals to the common morality in both normative and nonnormative ways. The common morality has normative force meaning that it sets up moral standards for everyone and failing to accept these standards is unethical. Nonnormatively, Beauchamp claims that it can be studied empirically whether the common morality is present in all cultures. So, claims about the existence of the common morality can be justified empirically and analysis of the adequacy of the common morality involves normative investigation (Beauchamp, 2003, p. 265).

6. A Danish empirical study

One of the aims of a Danish empirical study where oncologists and molecular biologists were interviewed was to test whether there is a difference in the ethical considerations or principles at stake between the two groups. Since this study explores part of Beauchamp’s hypothesis, he followed this study personally. This study was based on 12 semi-structured interviews with three groups of respondents: a group of oncology physicians working in a clinic at a public hospital and two groups of molecular biologists conducting basic research, one group employed at a public university and the other in private biotechnological
company. The interview texts were transcribed word-for-word and analysed using a phenomenological hermeneutical method for interpreting interview texts inspired by the theory of interpretation presented by the French philosopher Paul Ricoeur. There were three steps in the data analysis. First, the texts were read several times in order to grasp their meaning as a whole. Next, themes were formulated across the whole interview material. And lastly, the themes were reflected on in relation to the literature which helped to revise, widen, and deepen the understanding of the texts (Ricoeur, 1976; Ebbesen & Pedersen 2007).

The results of the study are summarised shortly. This empirical study indicated that oncology physicians and molecular biologists employed in a private biopharmaceutical company had the specific principle of beneficence in mind in their daily work. Both groups seemed motivated to help sick patients. According to the study, molecular biologists explicitly considered nonmaleficence in relation to the environment, the researchers' own health, and animal models; and only implicitly in relation to patients or human subjects. In contrast, considerations of nonmaleficence by oncology physicians related to patients or human subjects. Physicians and molecular biologists both considered the principle of respect for autonomy as a negative obligation in the sense that informed consent of patients should be respected. Molecular biologists stressed that very sick patients might be constrained by the circumstances to make a certain choice. However, in contrast to molecular biologists, physicians experienced the principle of respect for autonomy as a positive obligation because the physician, in dialogue with the patient, offers a medical prognosis evaluation based upon the patients' wishes and ideas, mutual understanding, and respect. Finally, this study disclosed a utilitarian element in the concept of justice as experienced by molecular biologists from the private biopharmaceutical company and egalitarian and utilitarian characteristics in the overall conception of justice as conceived by oncology physicians. Molecular biologists employed at a public university were, in this study, concerned with just allocation of resources; however, they did not support a specific theory of justice (Ebbesen & Pedersen 2007a, 2008a, 2008b).

This study showed that the ethical principles of respect for autonomy, beneficence, nonmaleficence, and justice as formulated by Beauchamp & Childress were related to the ethical reflections of the Danish oncology physicians and the Danish molecular biologists, and hence that they are important for Danish biomedical practice. Apparently, no empirical studies have investigated specifically the importance of the four principles previously; therefore, this empirical study contributes to an enhanced understanding of Beauchamp & Childress’ theory from a new point of view. It could be objected, however, that the study did not centre on respondents who had already been screened to assure that they are morally committed, as Beauchamp recommend. According to Beauchamp, a way of screening whether persons are committed to morality is to test whether they are committed to the principle of nonmaleficence since this principle can be seen as the most basic principle of morality (personal communication). All respondents included in the study valued nonmaleficient behaviour.

7. Perspectives

Beauchamp & Childress believe that their four basic ethical principles are included in the cross-cultural common morality (Beauchamp & Childress, 2009). However, as described
above, some of Beauchamp & Childress’ opponents state that their theory has been developed from the American common morality and that it reflects certain characteristics of American society. Therefore, the theory might not be useful in other societies. Nevertheless, the results of the Danish empirical study demonstrate that the theory is related to Danish biomedical practice.

Future perspectives of the Danish empirical study are to explore whether Beauchamp & Childress’ principles are cross-cultural and thereby have a universal perspective. This could be done by investigating whether there is a difference in the ethical considerations and principles at stake between physician oncologists working in different cultural settings (e.g. Scandinavian, Southern European, Asian, and American cultures). For instance, in Japan the principle of respect for autonomy is said to be more family oriented than in America (Fan, 1997). What is needed is a qualitative investigation of Japanese culture. This future study might show that Beauchamp & Childress’ principles need reformulation to be used in specific cultural settings.

8. References

This book presents a collection of recent and extended academic works in selected topics of biomedical signal processing, bio-imaging and biomedical ethics and legislation. This wide range of topics provide a valuable update to researchers in the multidisciplinary area of biomedical engineering and an interesting introduction for engineers new to the area. The techniques covered include modeling, experimentation and discussion with the application areas ranging from acoustics to oncology, health education and cardiovascular disease.

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